

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-001944**Date Inspected:** 27-Mar-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

OBG/Tower Sub Assembly**Bay 7-OBG - Floor Beam Sub Assembly:**

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Huang Xin Lan ID #044780 groove welding fill pass's joining floor beam diaphragm plates for F003-045-001 & 006. Mrs. Huang was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand JW-3, class EM12K machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 60°C and welding parameters amps of 521, volts of 29.6, and a travel speed of 451 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-B-L2c-S-1.

Bay 7-OBG - Floor Beam Sub Assembly: B-WR140 & B-WR141

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Zhang Qing Quan ID #044774 groove welding floor beam stiffener to floor beam web for FB015-04-045 and FB002-04-045. Mr. Zhang was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm

WELDING INSPECTION REPORT

(Continued Page 2 of 4)

diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Mr. Hu Wei Qing to be: preheat temperature of 113/120°C and welding parameters amps of 285/265, volts of 30.2/30.6, a travel speed of 520/515 mm/min and a gas flow of 21/21L/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-345-FCAW-2G(2F)-Repair-1.

Bay 7-OBG - Floor Beam Sub Assembly: (repair)

QA Inspector Brannon randomly observed ZPMC personnel at FB015-04-045 and FB002-04-045 excavating an ultrasonic testing (UT) indication by method of carbon arc gouging. See ZPMC repair report number and UT report number B-WR140 & B787-UT-265R1, B-WR141 & B787-UT-266R1. QA Inspector Brannon observed ZPMC NDT technician Mr. Cai Xin Xin perform magnetic particle (MT) testing. Mr. Cai stated he did not find any indications.

Bay 8 – 38 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ying ID #045270 groove welding fill pass's joining SA293 (S) to P559 (S) weld joint SSD1 SA293 1B/2B. Mrs. Ma was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand LA-85, class ENIS machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Sha Zhi verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Sha Zhi to be: preheat temperature of 180°C and welding parameters amps of 610, volts of 30.2, and a travel speed of 480 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

Bay 8 – 38 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Zhang Hou Quan ID #048431 welding run off tabs for joining SA265 (N) to P207 (N) weld joint NSD1-SA265 10A. Mr. Zhang was observed welding in the 1f (flat) position utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E9018M H4R, class Excalibur 9018M MR, manual. QA Inspector Brannon observed the ZPMC QC CWI Inspector Sha Zhi verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Sha Zhi to be: preheat temperature of 180°C and welding parameters amps of 178. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3211-B-U3b-1.

Bay 8 – 13 Meter Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening diaphragm plate P773. ZPMC report #HSR1(T)-266-1st lift, P773. Cause for heat straightening mill induced distortion. Heat Straightening method by flame straightening with natural gas using a hand torch.

OBG Assembly Shop

WELDING INSPECTION REPORT

(Continued Page 3 of 4)

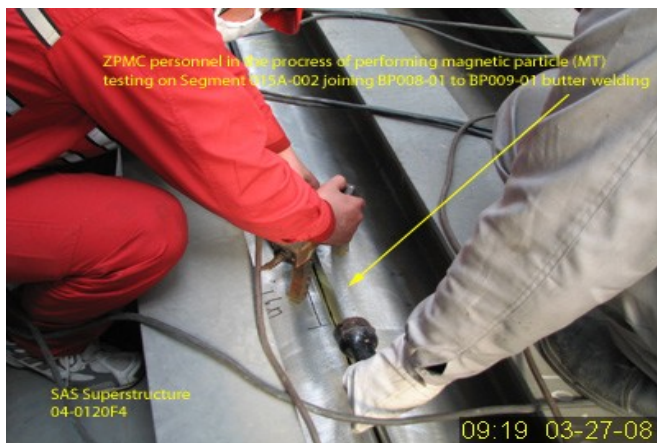
Bay 2 – Side Plate:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Wang Lan Ying ID#045265 groove welding root pass at Seg013A-0133 joining SP045-01 to SP057-01. Mr. Wang was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand JW-3, class EM12K machine. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Chen Chin Ming verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Chen Chin Ming to be: preheat temperature of 20°C and welding parameters amps of 633, volts of 33.5, and a travel speed of 526 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-223(2)-1T.

Bay 2 – Bottom/Side Plate:

QA Inspector Brannon observed ZPMC personnel at Seg015A-004 joining BP008-01 to BP009-01 and Seg015A-002 joining SP081-01 to SP026-01 Bottom/Side Plate CJP splice fit-up work in progress. The observed CJP splice is being fit-up for the use of a single vee groove that utilizes ceramic backing. The approved ZPMC WPS reflects a 6mm maximum root opening. QA Inspector Brannon measured the root and found it to be from 5mm to 9mm respectively. ZPMC had already repaired a few areas by buttering the bevel edge of the plate using a flux cored arc welding (FCAW) process. The ZPMC CWI Inspector Mr. Chen Chin Ming stated that ZPMC would butter the area where the root opening is greater than 6mm. Note: ZPMC performed this task with the bottom/side plate mating assemblies in the as fit-up condition. ZPMC did not build up the full cross section of the groove face, however did build up the root opening to within a tolerance of 6mm or less in some areas. The present joint configuration resulting from ZPMC's repair attempt is not reflective of any Caltrans approved welding procedure specifications. The welding of these bottom/side plate assemblies did not occur during this shift.

The following digital photograph below illustrates observation of the activities being performed.



Summary of Conversations:

As stated within the report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

WELDING INSPECTION REPORT

(Continued Page 4 of 4)

Inspected By:	Brannon, Sherri	Quality Assurance Inspector
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Reviewed By:	Cuellar, Robert	QA Reviewer
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